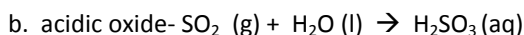
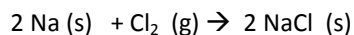
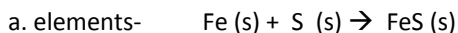
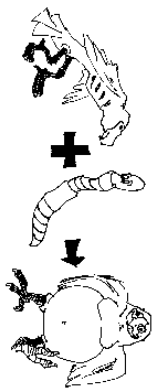
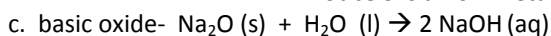


Predicting Reactions

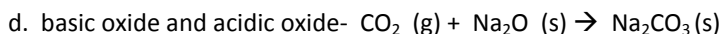
1. **Synthesis**- Two or more substances- elements or simple compounds- combine to form a more complex substance. These are also known as combination or composition reactions.



*notice S is a non-metal

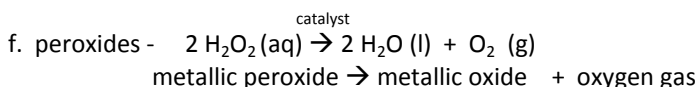
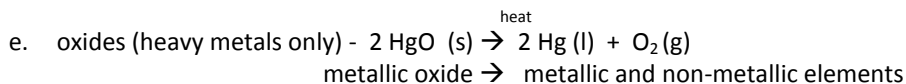
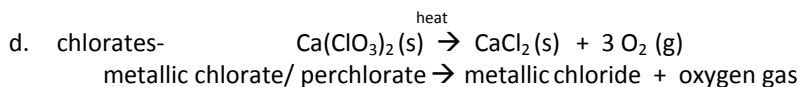
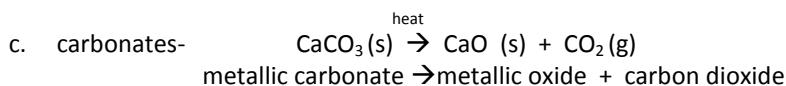
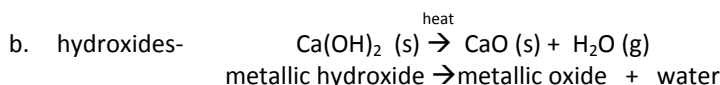
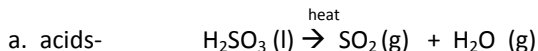


*notice Na is a metal



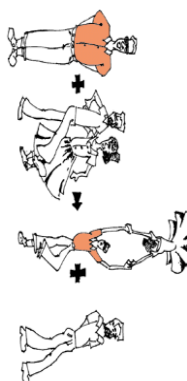
2. **Decomposition**- A more complex substance is broken down, by heat, electricity or some other means, to give two or more less complex substances.

[All of the following (a through e) examples need energy to go to completion]

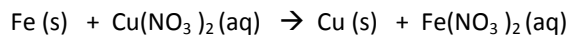


3. **Single Replacement**- An element (that is more reactive) replaces an element (that is less reactive) from a compound.

[Remember: metals replace metals, and nonmetals replace nonmetals.]



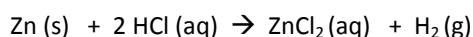
- a. **Reactive** metal will replace the metallic ion in a compound of a **less active metal**. [Use activity series (handout) to determine the more reactive metal]



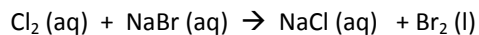
- b. **Very reactive** metals such as those in **Group IA and IIA** will react with water as follows:



- b. Active metals will react with acids as follows: [Use activity series given out in class to determine which work like this.]



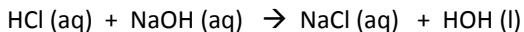
- d. Halogens (nonmetals) replace less active halogens. [Use activity series as in c to determine what replaces what.]



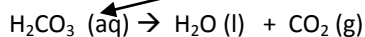
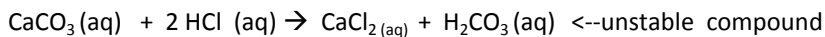
4. **Double Replacement (metathesis)**- the metallic and nonmetallic portions of the compound exchange their ions.



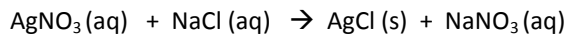
- a. neutralization reaction- acid + base yields salt + water



- b. salt with acid or base yields a volatile acid or a compound that decomposes (usually into a gas)

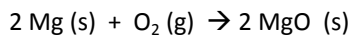


- c. reaction of soluble salts produces an insoluble salt and a soluble salt. [See solubility table]

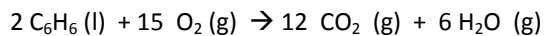
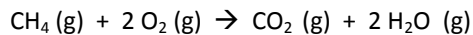


5. **Combustion reactions**- In this type of reaction a substance (compound or an element) is burned in air (actually oxygen). Examples are:

- a. element [this is also called synthesis]



- b. hydrocarbon-**complete combustion**



- c. hydrocarbon-**incomplete combustion**

